

IN THE CLAIMS

Claim 1. (Currently Amended) A plasma processing apparatus comprising:

a processing container having a holding stage that holds a substrate to be processed;
a micro-wave transmission window provided on or above the processing container,
opposite to the substrate to be processed placed on the holding stage;

a micro-wave antenna provided on or above the micro-wave transmission window,
opposite to the micro-wave transmission window, for supplying a micro-wave into the
processing container;

a micro-wave electric power supplying source connected to the micro-wave antenna;

an electric-field measuring unit that measures electric field strength of the micro-wave
supplied by the micro-wave antenna; ~~and~~

a controlling unit that controls the micro-wave electric power supplying source based on
the electric field strength measured by the electric-field measuring unit, and

wherein the electric-field measuring unit is arranged at a ~~node~~ loop of a standing wave
formed in the micro-wave transmission window.

Claim 2. (Original) A plasma processing apparatus according to claim 1, wherein

the micro-wave antenna is fed via coaxial waveguides , and

the micro-wave antenna has: an antenna main body having an opening; a micro-wave
radiation surface provided on or above the antenna main body so as to cover the opening, the
micro-wave radiation surface having a plurality of slots; and a dielectric plate provided between
the antenna main body and the micro-wave radiation surface.

Claim 3. (Currently Amended) A plasma processing apparatus according to claim 1 ~~or 2~~,
wherein

the micro-wave antenna is a radial line slot antenna.

Claim 4. (Currently Amended) A plasma processing apparatus according to ~~any of claims 1 to 3~~
claim 1, wherein

the electric-field measuring unit includes an electric-field measuring probe.

Claim 5. (Previously Presented) A plasma processing apparatus according to claim 4, wherein the electric-field measuring probe has a structure in which a threaded portion and a measurement terminal that consist of an electric conductor are inserted into an outside container having a substantially cylindrical shape and made of an electric insulator, and in which the threaded portion and the measurement terminal are electrically connected by a semiconductor material.

Claim 6. (Previously Presented) A plasma processing apparatus according to claim 5, wherein the semiconductor material is a diode.

Claim 7. (Currently Amended) A plasma processing apparatus according to claim ~~4~~ 5 or 6, wherein the electric-field measuring probe has an opening for infilling of an insulation material.

Claim 8. (Currently Amended) A plasma processing apparatus according to ~~any of claims 1 to 7~~ claim 1, wherein the electric-field measuring unit is adapted to measure an electric voltage on or above a surface of the micro-wave transmission window.

Claim 9. (Currently Amended) A plasma processing apparatus according to ~~any of claims 1 to 8~~ claim 1, wherein the electric-field measuring unit is attached on or above the micro-wave antenna.

Claim 10. (Currently Amended) A plasma processing apparatus according to ~~any of claims 1 to 9~~ claim 1, wherein a plurality of electric-field measuring units is provided.

Claim 11. (Previously Presented) A plasma processing apparatus according to claim 10, wherein

the plurality of electric-field measuring units is arranged in a linear direction corresponding to a radial direction of a disk-like antenna main body.

Claim 12. (Previously Presented) A plasma processing apparatus according to claim 10, wherein one of the plurality of electric-field measuring units is arranged at a node of the standing wave formed in the micro-wave transmission window.

Claim 13. (Previously Presented) A plasma processing apparatus according to claim 10, wherein when a wavelength of the standing wave formed in the microwave transmission window is expressed as λ , a distance between the plurality of electric-field measuring units is $\lambda/4$ multiplied by an odd number.

Claim 14. (Previously Presented) A plasma processing apparatus according to claim 10, wherein when a wavelength of the standing wave formed in the microwave transmission window is expressed as λ , a distance between the plurality of electric-field measuring units is $\lambda/4$ multiplied by an even number.

Claim 15. (Currently Amended) A plasma processing apparatus according to ~~any of claims 1 to 14~~ claim 1, further comprising a controlling unit that converts into digital data and records measurement ~~result~~ results by the electric-field measuring unit.